

Foaming Shaving Cream

*Ins 01*  
*Ins 02*  
*Ins 03* This invention relates to a foam-generating shaving cream based on synthetic surfactants which is suitable for application from a tube or from a dispenser.

*Ins 04* In the context of the present invention, a shaving cream is  
5 understood to be an aid to wet shaving using a razor blade which produces a stable foam of fine bubbles in the presence of water and air mechanically incorporated by means of a brush or sponge in a soap bowl or on the skin itself. This foam is intended to wet and lubricate the hair-covered skin and to soften the beard hair before shaving.

10 In addition, a product of the type in question is expected to have good wetting properties and not to irritate the skin.

Removal in measured quantities from a squeezing tube or from a pressure dispenser of the type commonly used for toothpastes or mustard requires a certain cream-like consistency.

15 Hitherto, preparations based on fatty acid soap have mainly been used for the stated purpose because soap satisfies the need for a fine-cell foam and a gel-like or cream-like consistency extremely well and, in addition, is inexpensive.

20 Unfortunately, soaps have the disadvantage that they are sensitive to water hardness. For this reason, compositions of the type in question often contain additions of synthetic surfactants to disperse lime soap. Moreover, soaps are always alkaline which, although having a favorable effect on softening of the beard hair, can also lead to irritation of the skin in sensitive people.

25 Hitherto, non-foaming shaving creams based on emulsions of long-chain fatty alcohols, for example according to EP 285 574 A2, or on glycerol, water and carboxymethyl cellulose according to WO 93/18740 A1

have mostly been used as alternatives.

Accordingly, the problem addressed by the present invention was to provide a shaving cream based on dermatologically compatible, hardness-tolerating synthetic surfactants which could be removed from a squeezing tube, a squeezing bottle or a pressure dispenser without using propellant  
5 gases and which, in the presence of water and using a brush or a sponge, would form a rich, stable foam of fine bubbles that would rapidly wet the skin and the beard hair and make them suitable for shaving.

*Ins 95* According to the invention, this problem has been solved by a  
10 shaving cream based on synthetic anionic and nonionic surfactants which is characterized in that it contains

15 to 30% by weight of water-soluble nonionic surfactants,  
5 to 20% by weight of water-soluble anionic surfactants,  
15 1 to 10% by weight of water-soluble polyols containing 2 to 10 carbon atoms and 2 to 7 hydroxyl groups and  
40% by weight or more of water.

*Sub 96* Water-soluble nonionic surfactants in the context of the invention are  
20 understood to be nonionic surfactants of which at least 15% by weight are soluble in water at 20°C while water-soluble anionic surfactants are understood to be anionic surfactants of which at least 5% by weight are soluble in water.

The water-soluble polyols used include, for example, 1,2-propylene  
25 glycol, ethylene glycol, glycerol, erythritol, sorbitol, mannitol, methyl glucoside, diglycerol, triglycerol or pentaerythritol.

Preferred polyols are glycerol, sorbitol or mixtures thereof. In a particularly preferred embodiment, glycerol and sorbitol are present in a ratio by weight of 1:1 to 3:1 and in a total quantity of 1 to 5% by weight.

30 Suitable water-soluble nonionic surfactants are, in particular, alkyl

polyglycol ethers which have a linear C<sub>12-22</sub> alkyl group and a polyethylene glycol ether chain containing 10 to 40 glycol ether groups, optionally in the form of a mixture with other water-soluble or water-dispersible nonionic surfactants. These other nonionic surfactants may be, for example, nonionic surfactants which contain a polyol group, for example a sorbitan residue, a glycerol or polyglycerol residue, a methyl glucoside residue or a polyglucoside residue as their hydrophilic group.

Whereas the saturated alkyl polyglycol ethers contribute towards providing the shaving cream with the necessary consistency, unsaturated alkenyl polyglycol ethers and nonionic surfactants containing hydrophilic polyol groups help the shaving cream to be squeezed more easily from the tube and to be made into a foam with water.

In one preferred embodiment, the shaving cream according to the invention contains a mixture of saturated linear fatty alcohol polyglycol ethers and fatty acid/polyol/ethylene oxide condensates as its nonionic surfactant component. A mixture of an adduct of 10 to 40 moles of ethylene oxide with a linear saturated fatty alcohol and a glycerol ethoxylate fatty acid monoester or fatty acid monoglyceride ethoxylate in a ratio by weight of 1:3 to 3:1 has proved to be a particularly suitable nonionic surfactant for establishing a consistency which allows easy squeezing from the tube but which still provides a dimensionally stable strand of the product. The consistency of the shaving cream according to the invention can be brought into the required range of 10 to 30 Pa.s (at 20°C) by varying the type and quantity of these nonionic surfactant components.

The water-soluble anionic surfactant used is preferably a high-foaming sulfate or sulfonate surfactant, for example a fatty alcohol (C<sub>12-16</sub>) sulfate (in the form of an alkanolammonium salt), a fatty alcohol (C<sub>12-16</sub>) polyglycol ether sulfate, preferably in the form of an alkali metal or magnesium salt, a sulfosuccinic acid monoalkyl (C<sub>12-18</sub>) ester salt, a C<sub>12-18</sub>

acyloxyether sulfonate salt a C<sub>12-18</sub> acyl tauride or a C<sub>12-18</sub> fatty acid monoglyceride sulfate salt, preferably in the form of an alkali metal, ammonium or alkanolammonium salt.

5 Fatty acid soaps should only be present – if at all – in quantities of less than 1% by weight.

Other synthetic surfactants, for example acyl sarcosides or acyl aminocarboxylic acids, acylated protein hydrolyzates, ether carboxylic acids corresponding to the general formula RO(CH<sub>2</sub>CH<sub>2</sub>O)<sub>n</sub>-CH<sub>2</sub>-COOH or RCONH(CH<sub>2</sub>CH<sub>2</sub>O)<sub>n</sub>-CH<sub>2</sub>-COOH, in which R is a C<sub>8-18</sub> alkyl group and n =  
10 1 to 6, or alkali metal or ammonium salts thereof may be present in the shaving cream in small quantities of up to 5% by weight.

The anionic high-foaming surfactant is preferably a fatty alcohol polyglycol ether sulfate salt with the formula R<sup>1</sup>O(C<sub>2</sub>H<sub>4</sub>O)<sub>x</sub>OSO<sub>3</sub><sup>-</sup> M<sup>+</sup>, where R<sup>1</sup> is a C<sub>10-16</sub> alkyl group and x = 10 to 18 and M is a sodium, potassium,  
15 ammonium or Mg<sup>++</sup>/2 ion.

A shaving cream according to the invention with optimum consistency, foaming behavior and foam stability and fineness contains

5 to 15% by weight of an adduct of 20 to 40 moles of ethylene oxide with  
20 a saturated linear C<sub>16-18</sub> fatty alcohol,  
10 to 20% by weight of a glycerol ethoxylate monofatty acid ester of an adduct of 5 to 10 moles of ethylene oxide with 1 mole of glycerol and a linear saturated C<sub>12-18</sub> fatty acid,  
10 to 20% by weight of an alkyl (C<sub>12-16</sub>) polyglycol ether sulfate sodium  
25 salt containing 1 to 6 glycerol ether groups,  
1 to 5% by weight of glycerol, sorbitol or a mixture thereof,  
50 to 60% by weight of water and  
typical auxiliaries and additives in a quantity of not more than 20% by weight.

In the context of the present invention, typical auxiliaries and additives are understood above all to be perfumes, dyes, pigments and pearlescing agents, other nonionic and anionic surfactants, polyols and  
5 emulsifiers and skin-cosmetic and dermatological agents, for example anti-inflammatory agents and plant extracts, styptic or antiseptic components, pH regulators and buffers for establishing a pH value of 6 to 8, complexing agents and refatting components.

Suitable pearlescing agents are, for example, dispersions of  
10 ethylene glycol distearate or diethylene glycol distearate in nonionic or anionic surfactant solutions. As refatting oil components, the shaving creams according to the invention may contain, for example, C<sub>12-22</sub> fatty alcohols or branched C<sub>16-24</sub> alcohols, fatty acid esters of fatty acid triglycerides, paraffin oil, silicone oil or other substances suitable as  
15 cosmetic oil components, preferably in emulsified form.

Allantoin or urea, for example, may be present as an epithelizing wound-healing agent while menthol or camphor, for example, may be present as cooling and antiseptic additives.

The following Examples are intended to illustrate the invention.

**Examples**

	1	2	3	4	5
Eumulgin B2 (1)	-	12	-	13	-
Eumulgin B3 (2)	17	-	12	-	8
Cetiol HE (3)	12	15	12	13	14
Eumulgin 05 (4)	3	-	3	-	-
Eumulgin 010 (5)	-	2	-	-	2
Texapon K14S 70 (6)	18	14	12	12	17
Plantacare 818 UP (7)	-	-	-	8	1
Euperlan PK 1200 (8)	-	6	7	-	7
Eutanol G (9)	-	-	3	-	-
Myritol 318 (10)	-	-	-	3	-
1,2-Propylene glycol	-	-	2	-	-
Glycerol	2	2	-	2	2
Sorbitol	1	1	1	1	1
Allantoin	0.2	0.2	0.2	0.2	0.2
Perfume	1.0	1.0	1.0	1.0	1.0
Water	45.8	46.8	46.8	46.8	46.8

The viscosity of these formulations at 20°C (Haake Rotovisko, Measuring System MV3) is in the range from 20 to 30 Pa.s.

The following commercially available products were used:

Eumulgin B2 : cetyl/stearyl alcohol + 20 moles EO  
Eumulgin B3 : cetyl/stearyl alcohol + 30 moles EO  
Cetiol HE : glycerol + 7 EO cocofatty acid monoester  
Eumulgin 05 : cetyl/oleyl alcohol + 5 moles EO  
Eumulgin 010 : cetyl/oleyl alcohol + 10 moles EO

- Texapon K14S70 : C<sub>12/14</sub> fatty alcohol + 3 moles EO sulfate, sodium salt,  
70% in H<sub>2</sub>O
- Plantacare 818 UP : C<sub>8-14</sub> alkyl poly(1,4)glucoside, 50% in H<sub>2</sub>O
- 5 Euperlan PK 1200 : pearlescing concentrate (alkyl polyglucoside,  
ethylene glycol stearate, glycerol)
- Eutanol G : 2-octyl dodecanol
- Myritol 318 : C<sub>8-10</sub> fatty acid triglyceride